



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/599,140

09/21/2006

Robert Manzke

PHDE040084US

4936

38107

7590

09/30/2009

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P. O. Box 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

ABDI, AMARA

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

09/30/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/599,140	<b>Applicant(s)</b> MANZKE ET AL.	
	<b>Examiner</b> AMARA ABDI	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/21/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

**Claim Rejections - 35 USC § 101**

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-5 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled “Clarification of ‘Processes’ under 35 U.S.C. 101” – publicly available at USPTO.GOV, “memorandum to examining corp”). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example, claim 1, recites the method of reconstructing projection data comprising the steps of: (acquiring the gated projection data set....; determining new projection data...; and supplementing the gated projection data...) is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. The Applicant has provided no explicit and deliberate definition (regarding claims 1-5) of how to perform the recited steps using the structure of statutory category such as process, machine, or computer.

Art Unit: 2624

3. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 9 defines a (computer program) embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a “computer-readable medium or computer-readable memory” and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim 9 to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure.

**Claim Rejections - 35 USC § 102**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2624

5. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonnet et al. ("Dynamic X-Ray Computed Tomography", IEEE, Vol. 91, No. 10, PP 1574-1587, October 2003).

(1) Regarding claims 1, 6, 8, and 9:

Bonnet et al. teach a method, image processing device (cone-beam geometry) (Page 1577, right col., lines 10-12), an apparatus (system) (Page 1574, right col., lines 31-32), and computer program (algorithm) (Page 1574, left col., lines 9-10), of reconstructing projection data from a gated projection data set, comprising the steps of:

acquiring the gated projection data set (acquiring sequentially several images) (Page 1575, Right col., lines 35-40); wherein source trajectory used for acquiring the gated projection data set has at least one gap due to gating (the missing projections is read as at least one gap) (Page 1577, left col., lines 27-30);

determining new projection data (associated set of parallel projections) corresponding to the at least one gap (missing projections) (P 1577, left col., lines 14-16); and

supplementing the gated projection data with the new projection data (associated set of parallel projections) to compensate for the at least one gap in the source trajectory (Page 1577, left col., lines 27-35 and right col., lines 2-6).

(2) Regarding claim 2:

Bonnet et al. teach the method of claim 1, further comprising the step of: reconstruction a four-dimensional image data set from the gated projection data (Page

Art Unit: 2624

1574, left col. lines 9-13) by using a cone beam computed tomography reconstruction (CBCT) method (Page 1577, right col., lines 10-12).

(3) Regarding claim 3:

Bonnet et al. teach the method of claim 2, further comprising the steps of: determining a four-dimensional vector field (motion vector field) (Page 1582, left col., lines 11-16) from the four-dimensional image data set (Page 1574, left col. lines 9-13); wherein the four-dimensional vector field (Page 1582, left col., lines 11-16) describes a motion of an object of interest (Page 1581, left col., lines 42-51 and Page 1582, left col. lines 11-12); and performing a motion compensation of the gated projection data set (Page 1577, left col., lines 27-35 and right col., lines 2-6) by using the four-dimensional vector field (motion vector field) (Page 1582, left col., lines 11-16).

(4) Regarding claim 4:

Bonnet et al. teach the method of claim 3, further comprising the step of: determining the new projection data (associated set of parallel projections) on the basis of the motion compensated three dimensional image volume (forward projection of warped images is read as the three dimensional image volume) (Page 1577, left col., lines 27-30).

(5) Regarding claim 5:

Bonnet et al. teach the method of claim 1, further comprising the step of: reconstructing the projection from the gated projection data supplemented with the new projection data (Page 1577, right col., lines 1-9); wherein the gated projection data set is a three-dimensional data set (Page 1577, left col., lines 38-40).

(6) Regarding claim 7:

Bonnet et al. teach the method of claim 6, wherein the processor is further adapted to perform the following operation:

reconstruction a four-dimensional image data set from the gated projection data (Page 1574, left col. lines 9-13) by using a cone beam computed tomography reconstruction (CBCT) method (Page 1577, right col., lines 10-12);

determining a four-dimensional vector field (motion vector field) (Page 1582, left col., lines 11-16) from the four-dimensional image data set (Page 1574, left col. lines 9-13); wherein the four-dimensional vector field (Page 1582, left col., lines 11-16) describes a motion of an object of interest (Page 1581, left col., lines 42-51 and Page 1582, left col. lines 11-12);

performing a motion compensation of the gated projection data set (Page 1577, left col., lines 27-35 and right col., lines 2-6) by using the four-dimensional vector field (motion vector field) (Page 1582, left col., lines 11-16); and

determining the new projection data (associated set of parallel projections) on the basis of the motion compensated three dimensional image volume(forward projection of warped images is read as the three dimensional image volume) (Page 1577, left col., lines 27-30); wherein the gated projection data set is a three-dimensional data set (Page 1577, left col., lines 38-40).

**Contact Information:**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMARA ABDI whose telephone number is (571)270-1670. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AMARA ABDI/  
Examiner, Art Unit 2624

/Samir A. Ahmed/  
Supervisory Patent Examiner, Art Unit 2624



Application/Control Number: 10/599,140  
Art Unit: 2624

Page 8